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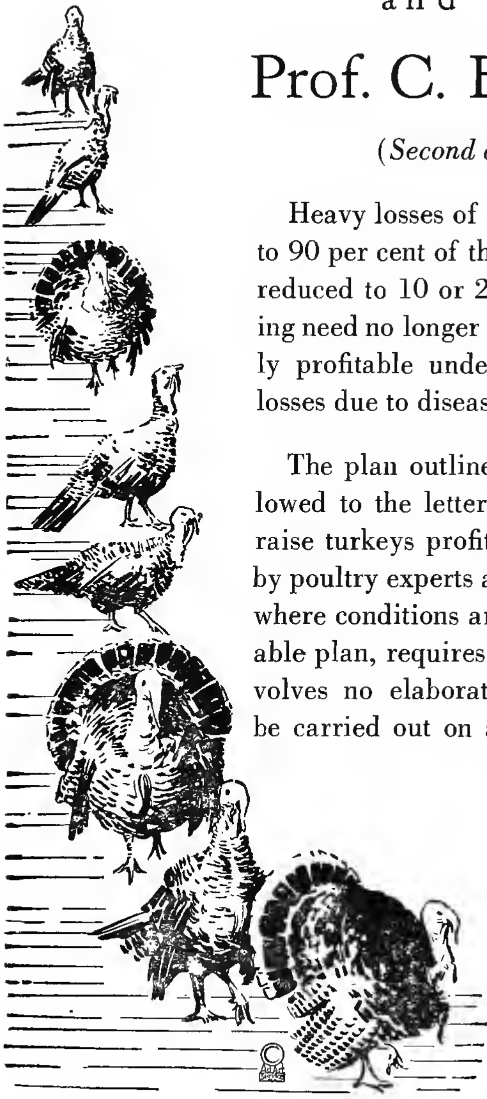
TALKING TURKEY

By Dr. W. A. Billings

and

Prof. C. E. Lee

(*Second edition revised*)



Heavy losses of turkeys, ranging from 40 to 90 per cent of the poults hatched, may be reduced to 10 or 20 per cent. Turkey raising need no longer be a gamble. It is a highly profitable undertaking when the heavy losses due to disease are eliminated.

The plan outlined in this booklet, if followed to the letter, will enable farmers to raise turkeys profitably. It has been tested by poultry experts and on hundreds of farms where conditions are average. It is a workable plan, requires no costly equipment, involves no elaborate preparations and can be carried out on any farm.

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TALKING TURKEY

SECTION I—Dr. W. A. Billings

FOR the last 10 years or more efforts have been made to raise turkeys by so-called artificial means. In the main most of the trials have been successful. The last two or three years the Minnesota Experiment Station has made tests of artificial incubation, brooding, and comparatively close confinement of the flocks. The success has been gratifying. This work together with that of other stations has led this department to advocate similar methods on the farm.

Turkey History—The centers of turkey population are constantly shifting. First one state and then another has led in production. Owing to these waves in production in the various states we hear from time to time that the turkey is on its way to becoming extinct. If you care to travel back a few years, the noticeable thing is that the industry seems to be constantly shifting to a new and more or less virgin territory—that is, so far as turkey growing is concerned. The Middle and far Western states are now raising turkeys heavily. The question is then—How long will they continue to be profitable?

In some sections of the United States a farmer will say, "We used to raise a lot of turkeys but we can't do it on this farm any more." This in brief has been the general opinion of the majority of ex-turkey raisers. The chicken population has always been more or less stationary as to distribution. At any rate it is generally conceded that it is not especially difficult to raise a few hens. Raising turkeys never has been standardized as has raising chickens. It has been a "hit or miss" affair with emphasis on the "miss." There is little literature on turkeys. Until the last few years, little or no experimental work has been done at the experiment stations on the important subjects of incubating, brooding and feeding.

A farmer said the other day that he would like to raise a few turkeys but didn't see how he could very well because he didn't have any trees on the farm. Another farmer doesn't like them because they get him into trouble with his neighbors.

Shooting the Red—Often you hear the statement that after the birds "shoot the red" the chances are better to avoid losses from any of the various diseases. This is a fairy tale. They will die of blackhead, become infested with lice or have any of the diseases of turkeys regardless of the state of "red." There is about as much truth in this statement as there would be in following out the common practice of giving chickens cayenne pepper to make them lay more eggs in the winter months.

Are They Wild?—The whole field of turkey husbandry is crowded with superstitious beliefs about turkeys. Some say they cannot be domesticated and that they are as wild as hawks and must be kept as nearly like their wild ancestors as possible. Turkeys are not wild. They are easily domesticated. If the chickens were encouraged to be wanderers as turkeys are we would not call them domesticated either. Turkeys are docile and gentle by nature. They respond quickly and thrive in domestication. Instead of gradually making it easier for turkeys to stand confinement we have deliberately bred for wildness, even to the extent of introducing wild blood occasionally. The wild boar doesn't stand confinement gracefully, but we have the pig family pretty well satisfied with their lot now.

Become Turkey Wise—Before trying to raise turkeys, get all the information you can about them. Learn what diseases they are likely to have and be able to recognize them when they occur. For example, blackhead is an important disease of turkeys. We know of hundreds of turkey raisers who do not know that this disease has nothing to do with the color of the bird's head. Another thing, don't try to go in for turkey raising blindfold. Don't start in too heavily. Begin on a small scale and grow up. You will learn a lot more than any one can tell you in a booklet of this kind. We are trying to point out only the biggest pitfalls. There are others, too. It is quite generally known that poults suffer from lice but nothing is done about it. Recently on a farm visit we found a flock in which there had been many deaths. We suspected blackhead but were disappointed. The birds were simply walking off with lice.

Don't be Frightened—When one starts to read the available literature on turkeys he is confronted with varying opinions on this subject and that. As a general thing the differences are of minor importance. This little booklet aims to discuss with the reader quite informally the subject we are both interested in.

Don't Be an "In and Outer"—To try anything successfully that is new we must approach it with an open mind. To make your turkey operations a success, a clear understanding of what is required is necessary. If you are interested enough to read this booklet thru, you are making a start in the right direction. You can raise turkeys if you understand the difficulties and make an honest effort to overcome them. If you don't make a hundred per cent success the first season, don't quit. Perhaps you will have made some mistakes or tried to make some short cuts or thought some of the suggestions made to be unimportant.

Chickens and Turkeys Don't Mix—Why raise turkeys in confinement, anyway? In order to make ourselves clear we will have to understand the bane of all turkey growers—that is, this disease, blackhead. I do not mean to imply that other things do not kill turkeys. They do, but we can overcome the others easily.

Those readers who have had a good measure of success using their present methods will not want to change. Those who are disgusted with turkeys from previous experience, but are willing to try something new, will find the suggestions novel, perhaps, but the best part of it is—they are workable. The Minnesota Experiment Station has practiced artificial incubation, brooding and confinement of flocks for three years with good success. The workers have tried them out, and while they are not completely satisfied they feel that they are on the right track. Other institutions have reported good results.

Here's the Plan—Any farmer will admit that turkeys usually bring a good price. The stickler is to have the turkeys to sell. Many have tried and failed with them for various reasons. Under the present system the business is too precarious to be attractive. Many people keep at it because the price stays good—otherwise they wouldn't fool with turkeys a minute. Even with a 50 per cent loss, turkeys have continued to pay a good profit. The thing then to do is to reduce these losses from 50 and even 75 or 80 to perhaps as low as 10 to 20 per cent. We are going to attempt it by what are usually termed artificial means. Turkeys have been raised in confinement here at Minnesota and several other experiment stations, on a small scale, of course. Even with limited space it has been clearly demonstrated that turkeys are easily domesticated and can be successfully raised in comparatively close confinement.

This Idea is Not New—The idea is not new and neither is it original. For as long as 20 years turkeys have been artificially hatched and brooded. The infant mortality of baby turkeys is too large. These losses are sometimes due to mismanagement, faulty feeding, inconsiderate hen mothers, lice, mites, and last, but more to be dreaded than all the rest—blackhead. Blackhead is said by some writers to be a disease of old turkeys, while others point out that only the young are affected. As a matter of fact it is both. The young turkey may suffer most, and many losses due to blackhead pass unnoticed or unrecognized or are blamed to other causes, such as the "dew on the grass."

The thing that has had us all guessing the last few years is how to prevent and cure blackhead. This is the disease that has been the limiting factor in turkey raising. It has actually driven people out of the business. Perhaps they will not admit this. However, it is a good bet that they don't know the disease when it exists. Most growers don't. Now then, let's tackle this problem first and I think you will understand what this all means.

Heads Don't Get Black—The name of this disease does not truly describe the trouble because almost all turkeys' heads become dark colored when sick. Many farmers will say, "No, I haven't had this disease in my turkeys because their heads didn't get black." The color means nothing more than that the bird is off feed and the veins about the head become clogged with slow moving blood. It is not a bowel trouble Of course, the birds have a greenish yellow diarrhea, but that is only a symptom, and not the disease itself.

It is a truly contagious disease. It is caused by a parasite or germ that the bird likely takes in with its food and drink. This germ is able to live long periods in the soil and once a farm becomes infected it is hard to say just when the infection dies out.

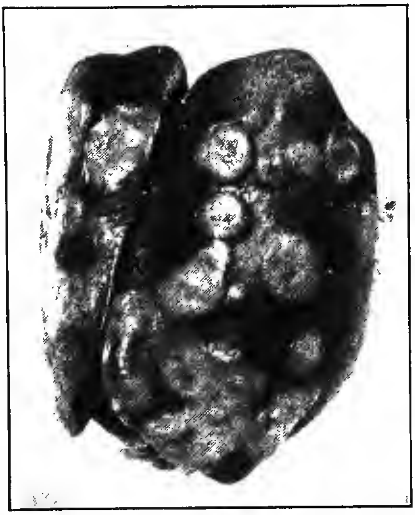
Where the Worm Comes In—The last few years a lot of investigation on blackhead has been done at various institutions. Much has been learned and we have still more to find out. We have discovered, however, that it is well nigh impossible to raise turkeys and chickens together. The small intestinal worm of chickens often acts as a carrier of the germ of blackhead. If turkeys on a blackhead infested farm are housed with the chickens they are almost certain to die—at least a large percentage of them will.

Let Us Get This Straight—Chickens and turkeys may be affected with three kinds of worms. (1) Tape worms, (2) the common intestinal round worms and (3) the hair-like worms found usually in the caecum or blind gut. We might aptly call this blind gut the chicken's appendix. The last named worm, which does not cause chickens a great deal of trouble, is the one we are accusing of helping to spread the disease to turkeys. The other two worms we will speak more about later on. How does this take place? On a farm where the blackhead germ exists, the soil becomes badly polluted with the germ of blackhead. The soil also contains innumerable eggs of this small caecal worm. The young turkeys eat the worm eggs and these in turn hatch out in the intestines. After hatching, it is believed that the worm in some way injures the lining coat of the intestinal wall and this, you see, enables the germ which is already present in the intestines to enter the blood vessels, set up an inflammation in the wall of the intestine, and then be carried on to the liver. These two places, namely, the caecum or blind gut and the liver, are the only locations where signs of the disease will be found.

Serious Losses Can Be Prevented—It is likely that the germ can produce the disease in turkeys without the assistance of these worms but it has been clearly demonstrated that if we can keep this worm from heavily attacking the turkeys we will be comparatively free from serious losses. Many investigators claim that where losses would be around 95 per cent, these can be kept down to 5 to 10 per cent. Surely this is worth trying. The germ of blackhead is almost always present in the soil of an infected farm. We have now definitely convicted the worm of being the chief agent in the spread of the disease. Our job then is to make it possible for these turkeys to be kept free of the infestation of caecal worms.

Worms Plus—As a last word on this subject—the worms alone cannot produce the disease. But—the worm plus the germs which are in the soil is the combination which encourages blackhead. All effort must be directed to keep the birds on clean soil that has not been contaminated by chickens with these small intestinal worms or their eggs.

Symptoms of Blackhead—Turkeys can die of blackhead at any age altho it is more common when they are very young or as Thanksgiving draws near. Little time need be spent on the symptoms of a sick bird. They just look sick and lag behind the rest of the flock. The heads do not have to be dark. They frequently have a yellowish or greenish yellow diarrhea. That is about all we can safely say as to what the sick birds look like. If that is the case, how are you going to tell it then? Open a dead bird. That is the only way it can be positively identified.



Liver and Gizzard of Turkey With Blackhead. Spots on Liver are Ulcers of Light Yellow Color, Often With a Greenish Yellow Border Around Them.

Examine just two places—the liver and blind gut, or the caecum. The germ starts operations in the caecum and from there is carried on into the liver which is the other place we observe. We will look for an enlarged caecum, which may be filled with a yellow, cheesy material. In the absence of this the caecum may be merely inflamed. When affected, the liver will show round spots or ulcers which often have a greenish yellow border around them. These spots on the liver resemble a rotten spot in an apple.

How About a Cure?—There is no cure for blackhead. Don't vaccinate for it, either. There is no such thing. If your flock is affected with this disease put into practice the things we are recommending in this pamphlet.

Plan Will Prevent Other Ills—As mentioned before, turkeys may have other diseases too, but they are not so serious as blackhead. This plan will effectively control worms—both tape and round worms. The saving in time will permit the owner to treat them oftener for lice and mites. They are all together and easily caught and quite tame. The ravages of tuberculosis are more easily kept down. You will raise turkeys with less uncertainty than you ever did before. Under the common system the writer would not recommend any one to embark in the business of raising turkeys.

THE PLAN IN DETAIL

The Best Breed—We are asked many times to designate the best breed of turkeys. We will side-step that question by saying that the breeds most commonly seen in Minnesota are Bronze, Hollands, and the Bourbon Reds. The popularity of the Bronze, far out-strips the others because of greater size. The Hollands are usually chosen because of their placid disposition and the fact that they were not supposed to be roamers. Under this plan, this virtue is not considered because none of them will roam. So far as breeds go, you can't go wrong on any of them for they all have their good points.

How Many to Start With—Don't start with more than can be handled well. For the average farmer who makes somewhat of a sideline of his turkeys, six or eight hens should be enough. Grow into the business rather than grow out.

How Many Males—Select good strong males which have all the best breed characteristics well defined. Do not mate more than 10 or 15 hens to one male. It is considered best to use birds over a year old. This applies to the females as well. Never use small, undersized birds as breeders. If the hen is a good layer, she may be profitably kept for four or five years. One mating is enough for each clutch.

About the Eggs—Eggs for hatching should not be kept over 10 days. A lot of trouble with low hatchability is the result of keeping eggs too long. The eggs should be collected each day and kept at an even temperature of 50 to 60 degrees. They should be turned over each day. Turkey hens will lay eggs in places prepared for them. Disguised boxes or barrels placed suitably will do very well. Some growers confine the birds until they have laid.

ARTIFICIAL INCUBATING AND BROODING

Hatching the Eggs—Never set hen eggs and turkey eggs together. There are several reasons why you should not. Eggs may be hatched under chicken hens. turkey hens or in an incubator. Turkey eggs can be hatched very well in an incubator and this method is gaining favor each year. It is safer in every way. Under this plan it is better to hatch with an incubator but the hen can be used. On the average farm a 100 to 250 hen-egg machine will be big enough.

Incubators—The machine should be set up a few days before the eggs are put in so that it is sure to be running properly. The starting temperature should be 101½ degrees with a standing thermometer. As hatching progresses the temperature will rise to 103-104 degrees toward the end. This due to the generation of bodily heat by the developing poult in the shell. The eggs should be turned twice daily. A little additional moisture is needed and this can be supplied by placing in the machine a plate of sand which is constantly kept wet.

Turkey eggs hatch in 28 days. Newly hatched poults should remain on the egg tray of the incubator until thoroly dried off. Then allow them to drop into the nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in the nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove the egg tray. Gradually reduce the heat to 95 degrees by lowering the flame and opening the door of the machine ever so little. The poults may be kept in the incubator nursery until they are 24 or 36 hours old or until they appear strong on their feet. They are then removed to the brooder.

Some growers start the hatches under both chicken hens and turkey hens and then transfer to the incubator for the last two or three days. This plan is not to be recommended.

Brooding—Brooding may be done with portable brood coops or the poults may be brooded artificially with a brooder house and hover. If at all possible use a brooder house and keep the poults away from the hens entirely after hatching. If one does not have a brooder house, perhaps a makeshift one can be provided to take its place. Brooding with either turkey hens or common hens is not nearly so safe as the complete separation of the young poults from the old hens. The brooder house enables the caretaker to keep them on clean ground and away from the source of blackhead infection. Poults may die of blackhead as young as 2 weeks.

The Brooder House—On page 9 you will find plans for a brooder house. If a brooder house is to be constructed it is a great advantage to have it set on skids as shown in the drawing. This enables one to move it frequently to new ground. If a portable brooder house is used be sure to have four openings or doors for the poults to leave the house. If this is done we will stake off four runs as shown on page 10. These runs are 8 feet wide and 4 or 5 feet high. They are only temporary and are taken down each time the brooder house is moved. If this plan is followed the poults will be allowed to have run No. 1 the first week. The second week this run is shut off and the birds are allowed to go into run No. 2, the third week, into run No. 3, and the fourth week on run No. 4. This gives four distinct runs and is easily arranged if you have a portable brooder house.

If you should have a permanent brooder house four runs can be arranged in front of the building as shown in the drawing on page 11. If the soil about the brooder house is badly contaminated from chickens it will be very necessary to spade it up and turn it over thoroly. If possible seed it down to oats or some other fast maturing crop. This will help renovate the soil. Between 200 and 300 poults can be handled in this 12 by 14 brooder house.

For heat in the house, a hard coal stove is best but any other heating arrangement that will maintain an even temperature of about 98 degrees may be used. As the birds grow older and as the season advances the heat is gradually reduced until they require little heat.

One of the greatest brooder troubles turkey raisers have is crowding and smothering. An 18 inch netting around the brooder room, the lower edge fastened to the floor a few inches from the wall and the upper edge to the walls will prevent most of the crowding losses. This cuts off the corners and eliminates the straight walls. It gives a bowl-shape and the sloping netting prevents a pack when the poults crowd. Many smothering losses occur immediately after the attendant leaves at night. If there are curtains in your brooder house, draw them a little at a time until the house is darkened. Or take a lantern to the house and when you are about ready to leave begin turning the flame down, a little at a time every minute or so until the room is dark. Move quietly and slowly. Do not excite the poults. Then edge carefully to the door and close it softly when you go out. Otherwise you may find smothered birds against the door next morning. They will surge after you if you move hastily and leave the room abruptly. Also do not use the brooder house as a storage place. One raiser lost several birds in a 10 quart pail. One jumped in thru curiosity and others followed. Another man lost many the same way because he left an open barrel in his brooder house.

When the poults are about 8 weeks old and the weather is favorable they may be removed to the plot of ground set aside for this purpose. (See page 10.)

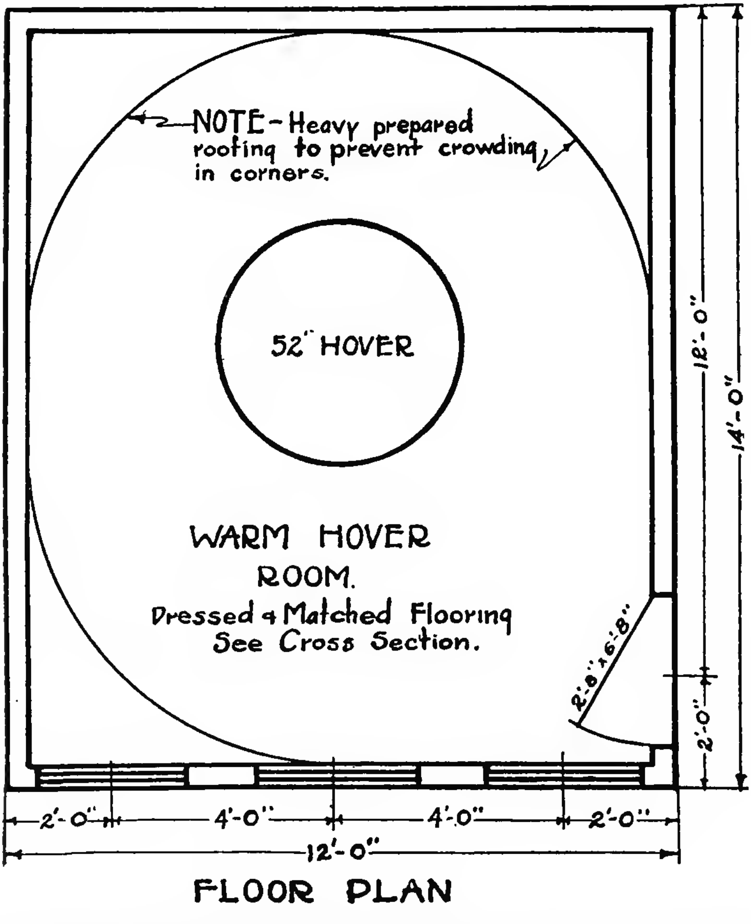
NATURAL HATCHING AND BROODING

If the entire hatching is done with hens a little different procedure is necessary. A chicken hen will cover 9 to 11 eggs. A turkey hen will cover from 15 to 18 eggs. Be sure to rid them of lice before they are set. This can be done with sodium fluoride. The boxes or barrels should be carefully cleaned to make sure that they are free of mites. Carbolineum makes a good spray to keep these pests away.

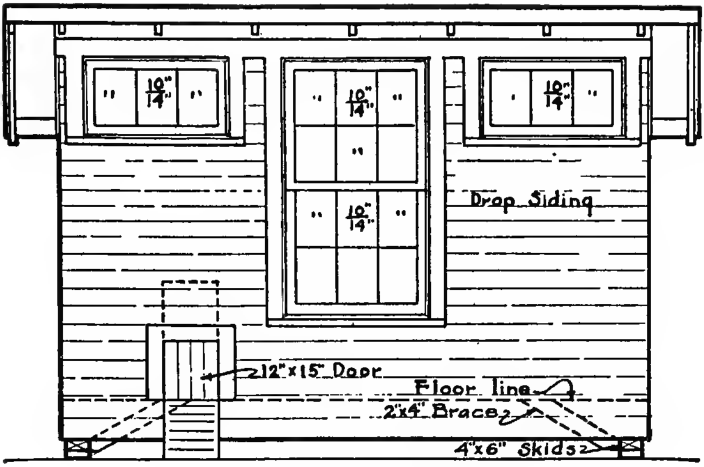
When to Hatch—In Minnesota and other northern states, May is perhaps the best month to hatch. Don't have June hatched birds. They do not mature properly and usually are not profitable. If one is using the incubator and brooder method earlier hatching may be practiced. The middle of May should be about right for one who is using hens for hatching. In most years the weather is usually somewhat settled and outdoor brooding can be done. However, additional protection must be provided for the poults in damp or wet weather.

A Movable Brood Coop—In using the natural method of incubation and brooding, it is necessary to provide movable brood coops. These need not be expensive but must supply a shelter for the mother and her brood. After the eggs are hatched the hen and the young poults are placed in the coop on clean ground. The best place to put the coop is in an orchard or clover or alfalfa pasture. At any rate it must be on ground away from the farm buildings and on soil not contaminated by chickens. If there are several broods they should be placed several rods apart and moved once a week.

Keep the poults confined the first few days and after that they may be allowed to range. The mother hen, however, is not permitted to be outside the coop unless the coops are inside a field which is fenced with poultry wire and free from chicken associates. The same feeding methods are followed as with artificially raised poults. Complete feeding directions will be found in a succeeding chapter.


NOTE-Heavy prepared roofing to prevent crowding in corners.
52" HOVER
WARM HOVER ROOM.
Dressed & Matched Flooring See Cross Section.
2'-8" x 6'-8"
12'-0"
14'-0"
2'-0"
2'-0"
4'-0"
4'-0"
2'-0"
12'-0"
FLOOR PLAN

Newly hatched poults sometimes forget where to get warm. A roofing paper fence is placed about the hover of the brooder house the first few days until the poults get acquainted with the stove and know enough to go to it when cold. It need be only a couple of feet high.



SOUTH ELEVATION

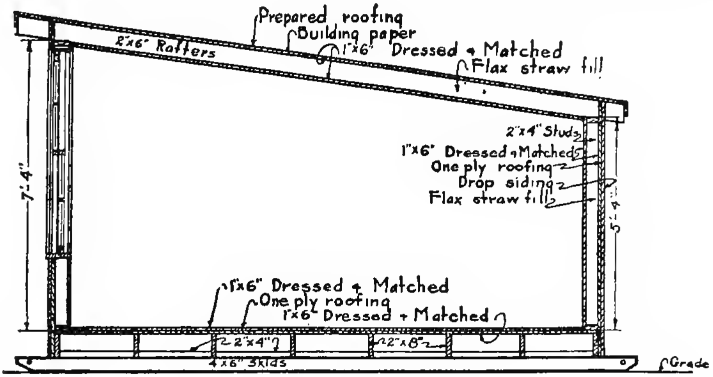
This is a front view of the portable brooder house. A door is cut in all four sides of the building to provide an opening to all four runs. The doors of the runs not in use are kept shut.

When the poults are from 6 to 8 weeks old or even younger if the weather is fine, they may be removed to the rearing ground. From this point on, the future handling of the naturally and the artificially raised birds is the same.

REARING THE POULTS

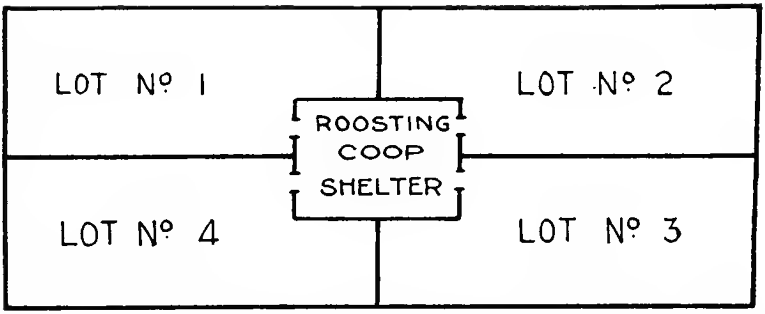
Poult Rearing Ground—This plot which we will term a rearing ground need not be especially large because 200 or 300 poults can be successfully kept on an acre until they are half grown. This acre should be selected in the corner of a clover or alfalfa field or orchard where chickens have not ranged to any great extent.

It should be fenced with poultry fencing to keep the chickens out and the poults in. This fence need not be over 6 feet high. If some

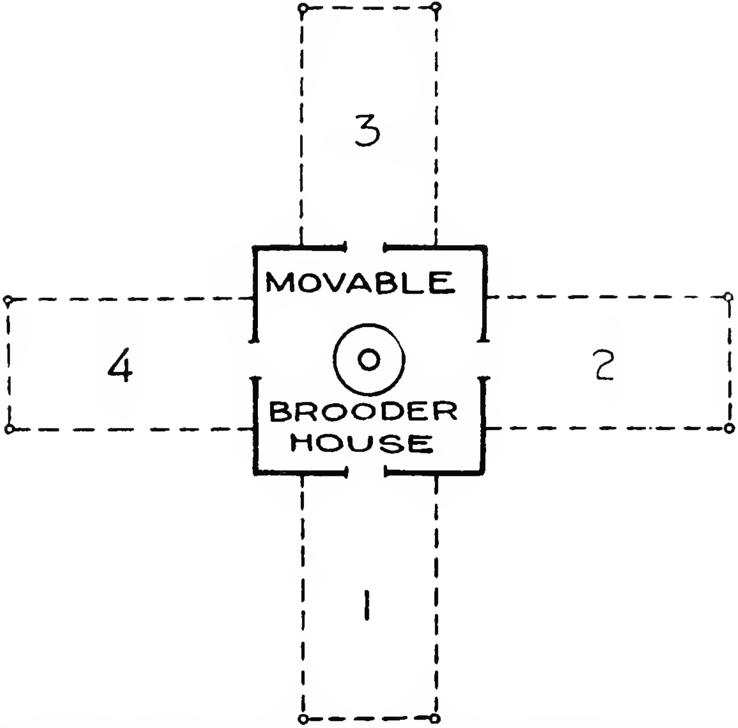


CROSS SECTION

This is a side view and shows the method of construction and arrangement of skids under the building.



This is a four lot rearing ground for poults from the brooder. The shelter in the center has four openings or doors, one leading into each lot. The birds are placed on this rearing ground when they are from six to eight weeks old, depending upon the weather. They are kept on Lot No. 1 for a month, then they are moved onto Lot No. 2 for a month, etc. If the birds are driven into the shelter each night for a week they will not cause trouble. The floor of the shelter should be cleaned carefully each week.



Dotted lines indicate poultry fencing about 4 or 5 feet high. This arrangement can be altered to suit local conditions. Poults are kept in these yards until time to go to the rearing ground at about 4 to 6 weeks of age, depending upon the weather.

of the birds should show a tendency to fly, one or both wings may be clipped. However, brooder raised poults do not seem to acquire this habit so readily as hen brooded poults. On page 10 you will find a diagram of a convenient way to lay out the rearing ground. This may be modified to suit local conditions but do not forget that it is planned mainly to provide rotated lots on clean ground and away from soil contamination by poultry.

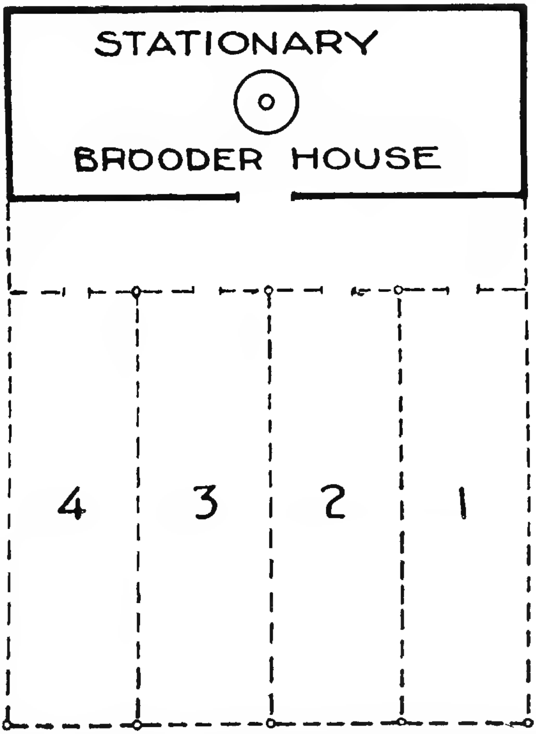
Don't Forget This—As long as the turkeys are kept on clean ground and away from chickens there should be no losses from blackhead. If blackhead should appear it is definite proof that the soil was soiled with chicken worms or eggs.

Approximately 200 birds can be kept on this rearing ground until they are half grown. Turkeys require lots of greens or forage. When they begin to appear crowded enlarge the size of the individual lots and keep rotating. Along in August or September during threshing time you may be tempted to let them out in the grain field. Don't do it.

This plan of confinement requires feeding the flock. Some people think that unless grasshoppers are thick—all is lost. Feed them as outlined in the following schedule. It will pay big dividends. Turkeys can exist without feeding when they have the run of the farm but they will do a great deal better under this plan of confining and feeding.

The Week Before Hatching—Prepare the brooder and exercise pen, first clean and wash the brooder including both hover and chicks' exercise pen with strong soap suds or lye; then disinfect carefully. Run the brooder for several days to become skillful in its operation.

First Day—Newly hatched poults should remain on egg tray of incubator until thoroly dried off. Then allow them to drop into the nursery after covering the burlap or wooden bottom with paper. Put a little dry sand in nursery so that the young turkeys may get a little grit before feed. After all the poults are hatched and dried, remove egg tray, gradually reduce heat to 95 degrees F. by lowering flame and by opening door of machine slightly.



Dotted lines indicate poultry fencing about 4 or 5 feet high. This arrangement can be altered to suit local conditions. Poults are kept in these yards until time to go to the rearing grounds at about 4 to 6 weeks of age, depending upon the weather.

Second Day—Keep poults in the incubator nursery until 24 or 36 hours old or until they seem quite strong on their feet. Then remove them to a brooder, the floor temperature of which should have been regulated to 95 degrees F. which temperature should be maintained for several days.

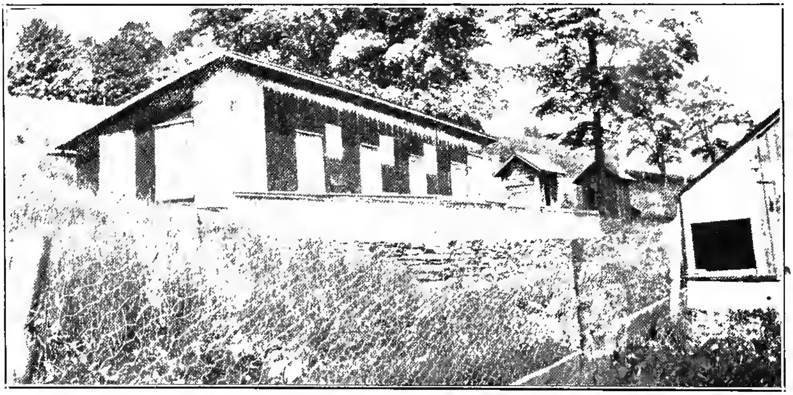
PLATFORM REARING

(Section II by Prof. C. E. Lee)

It is possible to rear turkeys for the first ten or twelve weeks, especially, on wire, concrete or board platforms. Many turkey raisers are rearing birds in this way instead of using several ranges and rotating them as described in the preceding pages. The platforms have the advantage of being absolutely sanitary and are easy to disinfect. However, neither turkeys nor chickens like the platforms as well as the ground. They particularly object to wire platforms, although it is not difficult to get them to use these platforms if the feed hoppers are put out on the platforms and no feed left inside the house.

Concrete and board platforms have the disadvantage that they become very wet and filthy after a rain and should therefore be cleaned immediately after each rain. Wire platforms are much cleaner and are, to some extent, self-cleaning, but the ground underneath them must be cleaned often or else the accumulating manure will draw flies and the birds may become heavily infested with tape worms from the eggs carried by the flies.

Where wire platforms are used, droppings on the ground should be covered with a light layer of acid phosphate every few days. This will keep down odors and tend to drive away the flies. Of course it is possible to use fly screening over the whole platform and around the outside edge clear to the ground so that no flies can get to the birds.



Mr. and Mrs. John Burlington (Stevensville, Pa.) start all turkeys in this long brooder with concrete, fly-screened rearing porch. Such conditions plus Beacon Feeds make prize winning turkeys.

The brooder house illustrated on this page has a concrete floor and the platform entirely closed by fly-tight wire. This is successfully used on the Burlington turkey farm at Stevensville, Pa. After the birds are ten or twelve weeks of age, they are put out on the open range

Let's Get This Clear—Growing turkeys will make better growth if they are taken off the platforms at between ten and twelve weeks of age and put out on a clean range. The growing turkey has very little resistance to diseases and parasites until it reaches ten or twelve weeks of age. After this, resistance increases rapidly and mature turkeys have a very high resistance to diseases and parasites.

How to Construct Rearing Platforms—If the platform is made of concrete, it should be slanted at the rate of about six inches every twelve feet. This will make it easy to clean. The platform should always be washed off with the hose as the final stage of the cleaning.

Wire platforms should be made of one inch square mesh wire. Fox wire is good for this purpose. Unless a very heavy wire is used, it will soon break down. This wire usually has to be ordered especially for the purpose, as ordinary hardware stores, even in good sized cities, do not carry this extra heavy wire. DO NOT BUY WIRE LESS THAN ONE INCH MESH.

It is important in constructing a wire bottom platform to see that the supports are planed off V-shaped at the top so that there is no wide space, where the wire rests on them, on which droppings may accumulate. 1 in. x 6 in. boards set on edge make good supports for the wire platform. 2 in. x 4 in. are too wide and should never be used unless the top edge is planed off to a narrow V. Otherwise, manure will accumulate on the top edge and disease is almost certain to start under these conditions.

The best supports for wire that the writer has ever seen were steel fence posts laid so that the edge of the angle supported the wire. The wire was nailed to the wooden frame all around the outside and laced together with soft iron stove pipe wire where the strips joined. This left no places for droppings to accumulate.

The dirtiest place on a rearing platform is usually right where the birds enter the house from the platform. The frame supporting the wire should be cut away at this point so that the droppings will not accumulate on the threshold but will fall through underneath.

Rearing platforms are recommended particularly where the soil available for a rearing range is badly infested with parasites or diseases.

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FEEDING TURKEYS

(Section III by Prof. C. E. Lee)

Beacon turkey feeds are put up in new, clean, white bags. Old bags should never be used as they are very likely to carry disease germs or parasite eggs. Directions for feeding should be followed exactly as given below. This feed plan was worked out in cooperation with one of the most famous turkey growers in eastern United States, and has given outstandingly successful results year after year. Both the Beacon Complete Starting Ration and Beacon Turkey Growing Feed are complete rations. Nothing should be added except as noted below under certain conditions. The hopper system of feeding, as used with these feeds, decreases the danger of parasites and diseases as the clean feed goes directly into the bird without coming in contact with infected litter or floor.

FEEDING SCHEDULE.

First Day—Give the poults no feed until 36 to 48 hours after hatching.

Second Day—Wet Beacon Complete Starting Ration with milk and mix to a crumbly mash. Feed twice a day. Between these feeds, give the poults what they will clean up of Beacon Complete Starting Ration dry. The first feed should be placed in shallow dishes or on top of heavy paper or egg case tops, placing the feed in small piles. After four days, replace the above with sanitary troughs or hoppers and keep the Beacon Complete Starting Ration before the birds at all times. **Give a little fresh green food daily when available.** This may be chopped and mixed with the wet mash and will increase the feed consumption. Beacon Complete Starting Ration and Beacon Turkey Grower contain a liberal amount of the finest alfalfa leaf meal. Therefore green food is not absolutely necessary and, in fact, many of our customers do not use it. Many lower grade rations on the market include little or no alfalfa leaf meal and of course with such rations it is absolutely necessary to feed a liberal supply of fresh green feed which is often hard to obtain in the proper condition and which requires extra labor to get. Furthermore, fresh cut green feed may be dangerous as it frequently carries coccidiosis germs and other infection.

Types of Milk—Liquid skim milk or buttermilk may be used to wet up the chick starter as outlined above for the first two weeks. If liquid milk is not available, it may be made up by adding one pound of dried milk to five quarts of water or three and one-half pounds of semi solid buttermilk or skim milk to five quarts of water. The dried milk is cheaper, more uniform in quality and less likely to be a source of danger.

Beacon rations contain so much milk that it is not usually necessary or advisable to feed extra milk after the first two weeks except where turkeys are affected with Bacillary White Diarrhea. Then, milk should be continued for the first four weeks. Here again our recommendations must differ from those given for lower grade feeds which require large amounts of liquid milk to be fed with them in order to supply the deficiency existing in the feed. Beacon rations all contain a very liberal amount of milk, in fact the proper amount which has been determined by careful research work to be best adapted for the entire growing period of the turkeys.

Water—Provide a constant supply of fresh water in clean sanitary fountains which should be washed out thoroughly and scrubbed with a brush at least once a day and preferably twice.

Grit—Keep a supply before the poults at all times. Good, clean gravel will do as well as any commercial grit. Beacon Turkey feeds contain the proper amount of minerals. It is not necessary to furnish minerals through the grit and the gravel is usually harder, therefore a better grinding agent than the soft limestone grits ordinarily sold commercially. Commercial grits may be used successfully.

Cod Liver Oil—Beacon Complete Starting Ration contains the proper amount of concentrated cod liver oil made under Columbia University patents. **Therefore, no cod liver oil, should be added to the ration** regardless of whether the poults are being reared indoors or where they can get sunlight. The concentrated oil not only insures a high and uniform vitamin potency which is retained in the feed for a long period of time, but also does away with the addition of a large amount of fish fat to the ration which in many cases was the cause of digestive and liver trouble where the ordinary cod liver oil was used.

After Four Weeks—Change gradually to Beacon Special Turkey Growing Feed, keeping this in front of the birds in the dry form at all times. Growth may be speeded up somewhat by continuing the crumbly wet mash, feeding it once a day only, but care must be exercised to limit the quantity of the wet mash. Otherwise, digestive troubles are very likely to follow. **Beacon Turkey Growing Feed does not contain concentrated cod liver oil except on special order.** If your turkeys are to be reared indoors or even on platforms, we would recommend that you order the turkey growing feed with the concentrated cod liver oil. This is supplied at only $2.50 per ton above the price for the feed without oil.

Feeding Grain—No grain need be fed until six weeks before the turkeys are to be marketed. Then feed Beacon Scratch Grain or Beacon Special Scratch Grain in self-feeding hoppers, but be sure also to keep the mash hopper full of Beacon Turkey Growing Feed.

If you follow the above directions carefully, the birds will be well fleshed with good firm meat and in topnotch condition for securing the highest price at marketing time. Do not hesitate to write us about any special problems which you may have.

OYSTER SHELL AND GRIT

Keep a supply before the poults at all times. Gravel grit will do as well as any.

CLEAN FOOD
CLEAN WATER
CLEAN HOUSES
CLEAN RANGE

INSURES SUCCESS
WITH
TURKEYS

AILMENTS OF TURKEYS

Lice—Many poults die or are seriously injured by lice. This is quite unnecessary because they are so easily controlled. If you are using hens for hatching be sure to delouse the hens before the little ones are hatched. If this is done lice are not so likely to appear. The common kinds of lice are the head and body varieties. The head lice can usually be eliminated by the application of lard or vaseline to the head.

The body lice, which are commonest, are best handled by the use of sodium fluoride. This is a white odorless powder which can be purchased from any drug store. Before the poults hatch apply several pinches of the powder to the skin of the sitting hen. Push back the feathers and rub the powder on the skin. The hen will now be clean and the young poults will not be exposed to lice as soon as they are hatched. Sodium fluoride can be used on the young poults after they are a week old but use only about two small pinches. Apply this the same as to the older birds.

Mites—If poults are brooded artificially in a brooder house be sure this is free from mites. If the poults are to be raised by their mothers with movable brood coops, be sure to clean the coops thoroly before putting them to use. The best thing to use is carbolineum. This liquid is best applied as a spray but can be brushed on in the case of a brood coop. Be sure to let it dry out fully before the birds are put in, otherwise the fumes may be too irritating. One good application of this is often sufficient for the year. If carbolineum cannot be secured, waste crank case oil is all right.

Roup—In adult or half grown turkeys roup is more often seen as a swelling or pouch under the eye. In this case the inner passages of the head become affected. When this pouch is seen the eye is usually clear unless the swelling extends to it. In young poults this disease appears much the same as in chickens. There may be a slight discharge from the eyes and nose which is often followed by a swelling of these parts.

The best treatment for the eye and nose form is the application of a mild solution of boric acid to the eye and nose. Dissolve about a teaspoonful of boric acid in a quart of warm water and use this as an eye lotion. Repeated treatments and giving the birds protection from bad weather are usually successful.

The older birds with the swell or pouch in the face are best handled by lancing, opening the pouch with a sharp pointed knife. This will allow the pus to drain out. Wash it out with the boric lotion. A small strip of cotton tape might be soaked in iodine and packed in the wound. This should be left in for a day or two so that the wound can get good drainage.

Tuberculosis—Tuberculosis is not nearly so common in turkeys as in chickens. However, it does occur and seems to be on the increase. This is no doubt due to the fact that the disease is so common in poultry and on those farms where the poultry flock is badly infected we may expect also to find the turkeys infected, especially if they are permitted to range together about the farm buildings.

Tuberculosis is a germ disease and is very contagious. The mature birds are more often diseased. The symptoms are much the same as in chickens. But don't forget that symptoms do not mean much because all sick birds look pretty much alike. The bird may get thin, and develop a diarrhea the same as in blackhead. On this account it is difficult to distinguish from that disease. The best way to be sure is to open a dead one.

Look for yellowish or grayish white spots on the liver, spleen (that round body under the liver) and intestines. On the intestines these spots may look like warts. These spots or lumps are hard and dry. You can tell tuberculosis from blackhead by the character of the liver spots. In blackhead the spots are soft and mushy with greenish yellow borders.

There is no cure for tuberculosis. If the disease gets a firm foothold in the flock it is best to get rid of all of them and start over. If the plan of separation of the turkeys from the farm flock of chickens is followed this trouble will not be so likely to occur. If you get stuck and are unable to tell this disease from blackhead send a sample to the Veterinary Division, University Farm, St. Paul, Minn., or to your own agricultural college. Here it will be examined free of charge.

The Bird Tick—The bird tick is relatively uncommon except in certain sections of Minnesota. In these places it is quite a pest and the cause of considerable losses. Don't mistake this for the fowl tick. It looks something like a wood tick to the average observer. Some folks take it for a bedbug. It seems to prefer to attach itself to the skin about the head and neck. It acts like other ticks, burrows into the skin and causes irritation. If present in large numbers, bird ticks will kill the poults. There is no treatment except to pick them off by hand. It will be necessary to go over the poults often and pick them off and destroy them, preferably by fire. These ticks very likely get on the birds which range on ground previously covered by wild birds such as pheasants and partridges.

INTESTINAL WORMS AND THEIR CONTROL

(Section IV by Prof. C. E. Lee)

INTESTINAL WORMS

There are many species of worms found in poultry. For purposes of control these may be divided into **round worms** and **tape worms.** The former may be divided into two groups, the **large round worms** and **caeca** or **pin worms.** The tape worms also may be divided, the large and the microscopic, both being common among flocks in the East.

Worms of all kinds cause two distinct types of damage (1) decrease of nutrient assimilation by the bird and (2) poisoning from toxic material excreted by the worm. One of these poisons destroys red corpuscles in the blood causing anemia as shown by pale head parts and weakened condition. Another poison acts on the nerve centers causing paralysis.

In round worm infestation the first injury seems to be the more important, with tape worms the second often appears earlier and effects the nerve centers so that the bird is paralyzed before it loses much flesh.

Birds affected by worms, more particularly tape worms, often show rich orange yellow shanks while at the same time they are coming down with paralysis.

Round Worm Control—Formerly the use of 2% of tobacco powder (1½ to 2% nicotine) was the favorite method of eliminating round worms. The difficulty with any such flock treatment, however, is that the birds which need the treatment the worst are frequently in no condition to eat and hence do not get enough nicotine to do them much good. Tobacco makes the mash unpalatable.

If it is certain that only round worms are present, (and such a condition is becoming less and less common) the nicotine sulphate capsule treatment is to be recommended.

Where, as is most common, several types of worms are present one of the "combination" treatments described below should be used.

Tape Worm Control—These flat white segmented worms appear to be on the increase in most poultry flocks, particularly in the intensive poultry centers.

The great difficulty in tape worm control is to get a vermicide which is strong enough to get the whole worm (including the head which is often imbedded deeply in the intestinal wall) and still avoid killing the bird.

Any effective worm treatment will disturb egg production to some extent and some will almost stop production in the flock for a week or ten days.

Treatment for Tape Worms—Where tape worms alone are present in the flock the Kamala Capsule treatment is often recommended but our experience has been that this is very uncertain, whether due to variation in the strength of the drug or some other cause we do not know.

We have known Kamala apparently to have no effect on the worms and again this treatment was followed by heavy mortality in the flock. For this reason we prefer to recommend one of the combination treatments given below.

The lye treatment is no longer widely used, experience showing that it is highly uncertain as to results.

Combination Worm Treatments—These are strongly recommended because it is seldom nowadays that a flock is not infested with several types of worms, if any.

IODINE TREATMENTS

Iodine as a vermicide was first perfected by Dr. W. L. Chandler of Michigan Experiment Station. Dr. Chandler found that iodine in the free or uncombined form is deadly to worms even when used in very small amounts, morever it acts on all types of intestinal worms.

Iodine Vermicide (Liquid)—This material developed by Dr. Chandler, has recently been further improved and the cost reduced. One pound may now be diluted with three and one-half quarts of water. The catheter has also been again improved now being a semi-flexible hard rubber tube with one ounce rubber bulb on the end (larger for older turkeys).

The liquid must be injected into the gizzard of the bird. This is not difficult. The cost is less than two cents per bird.

Method—The bird is preferably held with the left hand grasping the shanks above the hock joints. The first two fingers, or the thumb and first finger of the right hand, form a crotch catching the skull of the bird at the rear.

With head up, the bird is so held that neck and spine are in practically a straight line. The person using the catheter then opens the beak, slides the catheter down one side of the mouth, to avoid the windpipe, and down to the crop.

With a few slight movements of the catheter tip (often with none at all) the opening from the crop to the glandular stomach is found and the catheter slides down into the gizzard. This is not at all difficult though it may seem so to those who have not tried it.

We have used other methods of holding the bird, but after nearly three years experience with this treatment, we favor the above. The speed of treatment depends primarily on the person holding the birds. Experience teaches him to tilt the bird just so that the catheter slips down with little or no pause. The older the birds treated the easier the treatment.

Two or more catheters should be used so that one may be filling while another is being used.

Birds should not be fed grain within half a day before treatment.

The Iodine Capsule—This is simply a non-soluble capsule, containing the (concentrated) iodine and other vermicides, which breaks up only after it enters the gizzard thus liberating the iodine at the entrance to the intestine.

These capsules are not large and may be given as rapidly as the birds can be passed to the person administering the capsule.

Method—After the capsule has been pushed partially down the throat, with a quick push of the forefinger, the thumb and forefinger should be used on the outside of the neck to follow the capsule down and into the crop. This eliminates ejection by the bird and may be done with one quick motion as the bird is passed to an attendant, or released.

No starving, before treatment, is necessary **although feeding of hard grain within half a day before should be avoided.**

Efficiency and Cost of Iodine Treatments—Both iodine treatments have given satisfactory results in tests carried on by us. No worm treatment can be relied on to kill 100% of the worms in every bird with one treatment.

Some birds may need a second dose. These may easily be detected by their failure to return to normal condition later.

The liquid iodine vermicide costs just under two cents per bird, exact amount depending on number treated. The capsule treatment costs a little under four cents in lots of 1,000 at present prices.

The capsule treatment may be given faster. In either case 100 to 200 birds an hour is not difficult, with some experience on the part of those handling the birds as well as the one giving the treatment.

The Combination Gizzard Capsule—This is a newer treatment than the iodine but appears to be ineffective on tape worms. It is the least expensive of the three and growth and production are easily upset and often very slow in returning to normal. We do not recommend this treatment.

The iodine treatments have the advantage that they will also act on coccidae which may be left in the intestine of the growing birds.

Fake Remedies—There are many "marvelous" cures dispensed by "fly-by-night" concerns. The worm remedy trade is becoming a favorite field for those who formerly swindled the public with "egg-a-day" tonics (usually "Arabian," "Aleutian" or some other long-distance name).

Before purchasing any worm remedy the poultryman should investigate thoroughly.

Flock Treatment. Mineral Oil and Turpentine—Many of our customers have for the past year and a half, on our recommendation, tried a worm remedy which we worked out some time ago. Results have been very gratifying. We have yet to hear of the loss of a single bird by this treatment and it has the advantage of not effecting egg production adversely and also does get most of the worms.

For severe infestations, however, we recommend one of the individual treatments followed by the mineral oil and turpentine two weeks later.

Where the birds are already laying heavily and a worm treatment is desired which will upset production as little as possible, we especially recommend this treatment. Spirits of turpentine, one part, mixed with mineral oil, two parts (obtained at any drug store). Buy these ingredients in lots of a gallon or more at a time—the price is much less. Mix this oil and turpentine with the scratch grain using about one and one-half pints to 100 pounds of grain. Repeat every fourth evening for twelve days. THE SCRATCH GRAIN MUST BE TROUGH FED to keep it reasonably clean. The birds may not like the treated grain at first but will soon get used to it and clean it up.

Buy only "pure gum spirits of turpentine" and a "heavy, white, U. S. P., mineral oil." This is important. Treatment dangerous if drugs are impure. Magnus, Mabee & Reynard, Inc., 32 Cliff Street, New York City prepare this according to our specifications.

This treatment may be repeated after an interval of ten days. One or two treatments are usually sufficient to control all types of worms except in very heavy infestations. Since the treatment is cheap, easily given, and does not upset egg production seriously, it is a good plan to treat the birds several times a year as insurance against worms.

Prevent Reinfestation—Spending time and money on worm treatments is useless if the flock is allowed to become re-infested. Flies are carriers of worm eggs and must be kept down. In many sections it is necessary to screen all openings in the poultry houses to keep birds free from worms.

Manure attracts flies and also promotes direct re-infestation by round worms. Round worm eggs develop in 14 to 21 days after they are passed out of the birds intestine and when picked up by the bird (usually from infested droppings or soil) they quickly develop into full sized worms again. Tape worms must pass through an intermediate host, the fly, before they can re-infest chickens.

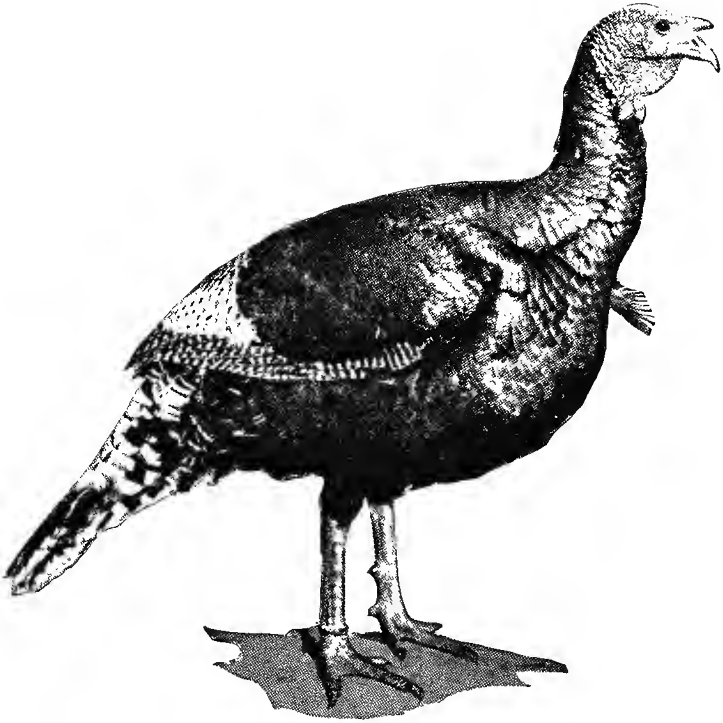
Keep Manure Away From the Poultry Plant (and from all soil on which chickens are to be ranged.

Screen All Manure Pits and dust the pile with acid phosphate to kill odors and keep flies away.

Wire all Perches underneath and down to the front edge of the dropping board, with heavy two inch mesh wire. (Light wire soon breaks down.)

Many poultrymen use a hinged board or lattice work in the front instead of wire. This is more permanent and eliminates sagging wire where the hens alight when going to roost.

The above also aids greatly in obtaining clean eggs from the flock.



PLEASE READ THIS

This little pamphlet outlines a simple method whereby turkeys may be raised free from blackheads, worms, etc.

We have attempted to make it as simple as possible. Please read it carefully, and get the plan clearly fixed in your mind.

We are advocating yards and confinement of the flock.

There is a reason for this. We must have clean ground that is free from chicken contamination.

Under ordinary farm conditions the only way we can be sure our turkeys are on clean ground is to yard them on clean ground and keep them there. This means all season.

If you didn't have blackhead or chickens on the farm and didn't import it this tale would be different.

However, conditions being as they are—this plan has been devised to help you.

Don't lay out your yards close to the farm buildings. This spells failure. Get out on an alfalfa field or some good pasture.

We think the system of yards on page 10 is the simplest for your purpose. This refers to the rearing ground.

Don't use the same grounds next year—move onto another clean space.

This plan calls for feeding. It pays to do this. Garbage may be all right for hogs but it won't raise turkeys. If the poults are out in early May and fed as per the feeding schedule on page 13 they will weigh close to 25 pounds by Thanksgiving.

We hope you have good success. It will work if you do your part.

Enterprise Press, Shortsville, N. Y.